In 2019 we have investigated the small-signal stability problem. In our study, we adapt our methods to ensure small-signal stability of the system using frequency regulation, HVDC power injections, SVC reactive power injections, and load shedding as controls. On that way, we propose to use time-discretization above convex restrictions and machine learning methods (convex polytope machines, neural networks). According to our results, machine learning methods (convex polytope machines, neural networks) significantly outperform existing analytical tools. On another hand, even a conservative analytic approximation allows to reduce sample/time complexity of machine learning methods and make them applicable in practice. We also designed novel robust algorithms for the voltage stability optimal controls and optimal power flow problem behind them. Finally, we in 2020 we have extended our algorithms for small-signal and voltage stability to for a range of possible uncertainty realizations and demonstrate their efficiency. Our team member Prof. Andreas Wachter was awarded the [second prize](#) at the DOE Grid Optimization Competition.